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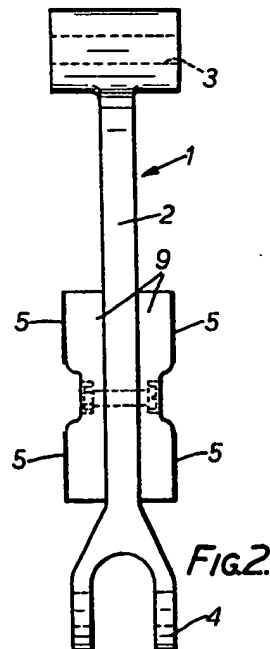
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(54) Overhead Conveyor Article Hanger Having Information Tab Thereon

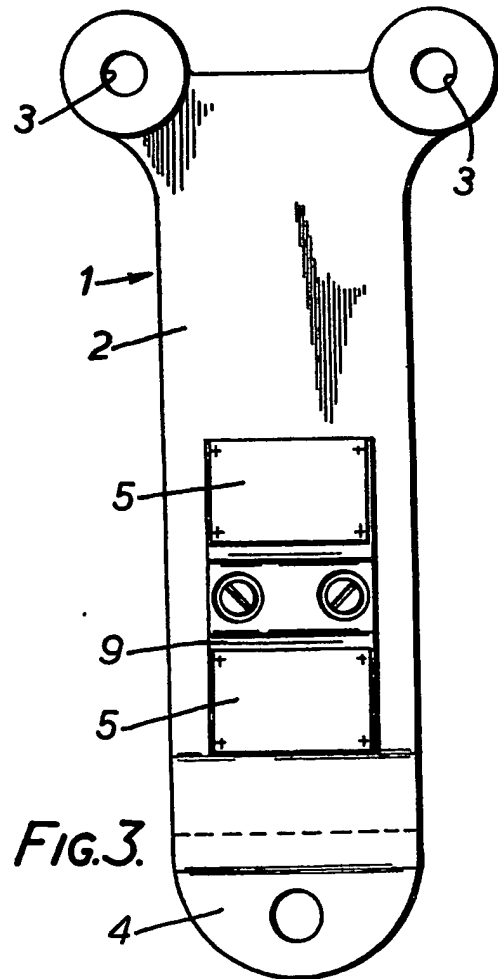
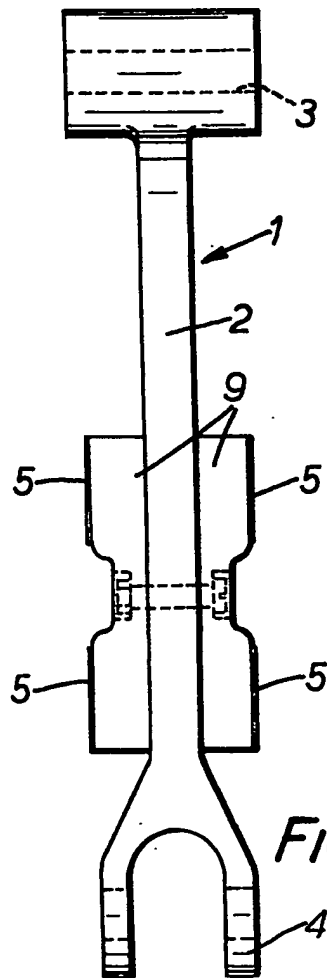
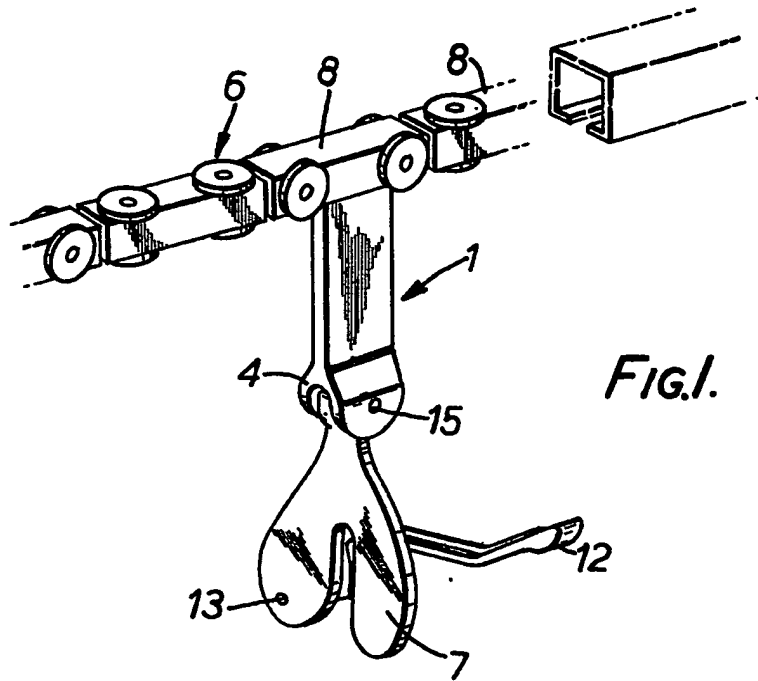
(57) A hanger (1) carries an article, for example a mail bag, below an overhead conveyor (6) and bears at least one tab (5) bearing encoded information which can be read by an optical or magnetic reader. This

enables the information on the tab or tabs (5) to be read without any physical contact with any part of the moving hanger. An article gripper is attached to the clevis 4 of the arm 2 and includes a pivoted arm co-operating with a gripping surface. the pivoted arm is moved to release an article by a trip stop in response to information read from the tab 5.



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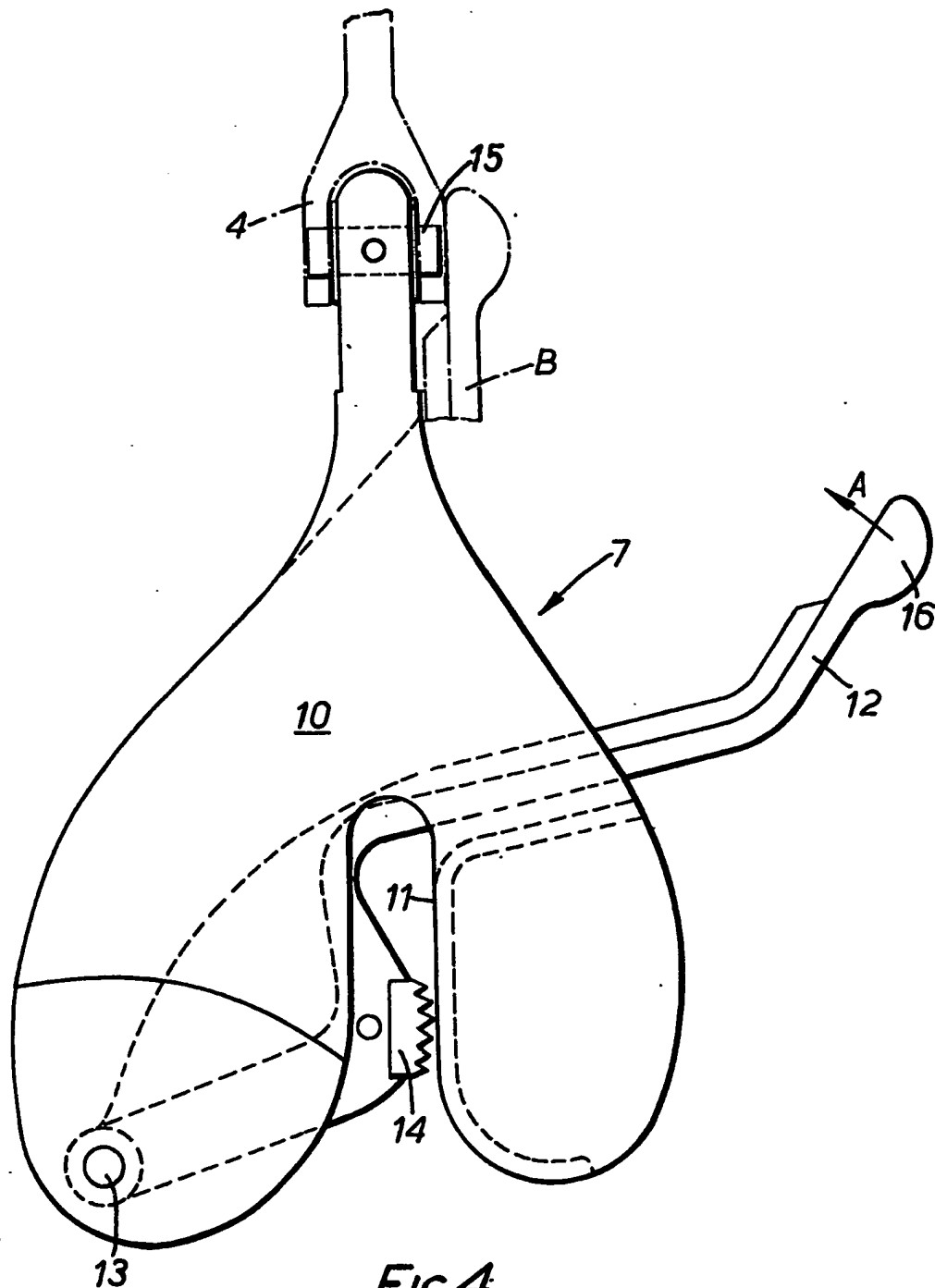


FIG. 4.

SPECIFICATION

Hanger for Carrying an Article Below an Overhead Conveyor

This invention relates to a hanger for carrying an article below an overhead conveyor and relates more particularly, though not exclusively, to a hanger for carrying mail bags in sorting offices.

Overhead conveyor systems are commonly used in situations requiring the automatic distribution of items from one, or a number of, loading locations to one or more predetermined destinations. In order to achieve such distributions, some form of addressing system is required.

A commonly used method of achieving this employs a mechanical coding system in which a number of pegs are movably mounted on hangers used for carrying the items below overhead conveyors so that each peg can be moved into a first or second position as desired. On each hanger each particular arrangement of pegs in first and second positions represents a code and a mechanical trip-operated device at each predetermined destination, responsive to being tripped by pegs in the arrangement corresponding to the particular code which has been assigned to the location of that particular trip-operated device, is arranged to release the item from the hanger when tripped. This particular system does, however, have several disadvantages, including the possibility of the pegs becoming bent after a continuous period of use and the difficulty of remembering or ascertaining which particular code is assigned to which destination.

The present invention aims to provide a hanger which is improved in the above respects.

According to the invention, there is provided a hanger for carrying an article below an overhead conveyor, comprising an upright arm, support means on the arm for enabling the arm to hang below the conveyor and be supported thereby, mounting means on the arm below the support means by which the article can be attached to the arm, and at least one tab on the arm bearing encoded information which can be read by an optical or magnetic reader.

Conveniently, for a hanger having two or more tabs on the arm, the tabs are arranged so as to be on one or both sides of the arm, the tabs on the one or each side which has more than one tab thereon being arranged one above another spaced lengthwise of the arm.

The one or each tab on the arm may bear two or more bits of information.

For a better understanding of the invention and to show how the same may be carried into effect, reference will now be made, by way of example, to the accompanying drawings, in which:-

Figure 1 is a perspective view of a hanger suspended from an overhead conveyor and carrying a gripper;

Figures 2 and 3 are respectively a front view and a side view of the hanger, and

Figure 4 is a front view of the gripper.

Referring to Figure 1, a hanger 1, intended for use in carrying mail bags, is suspended from an overhead chain conveyor 6 and carries from its lower end a gripper 7 for carrying mail bags.

Referring to Figures 2 and 3 the hanger 1 comprises an upright arm 2 in the form of a metal casting which is formed at the top with two spaced apart bearing holes 3 and which provides a clevis 4 at the bottom of the arm.

The links 8 of the overhead conveyor 6 from which the hanger is suspended each comprise a channel-shaped frame supporting at each end a pair of rollers, one on each side of the frame, mounted on pins extending through the sides of the frame. The hanger 1 is fitted inside the channel in one of the links, the holes in the sides of that link which enable the pins to pass through then being in register with the holes 3 in the hanger so that the pins secure the hanger to the link. The chain runs inside a channel guide of rectangular section, formed with a longitudinal slot in its underside through which the hanger 1 hangs. It can be seen from Figure 1 that the links 8 are arranged so that they will bear, by means of the rollers, alternately on the side walls and on the bottom wall of the guide.

Bolted to the arm 2 between the bearings 3 and clevis 4 are two tab mountings 9, arranged one at each side face of the arm, and each mounting carries two tabs 5 arranged one above the other spaced lengthwise of the arm. These tabs bear information in a suitable form to be read by an optical or magnetic reader. For example, each tab includes an area on which is encoded a binary "bit", thus giving a total of four binary bits of information for each hanger. Each bit may be magnetically encoded or may be arranged for optical decoding. In the latter case, the information may be encoded in the form of a hole, or absence of a hole, in one position or in each of a number of predetermined positions on an area on the tab, or the encoded information may consist of a surface area or areas chosen to be of a reflectivity which is greater or less than a predetermined amount, or it may be an area on a piece of material of a pre-selected translucency which is greater than or less than a predetermined extent of translucence. Other optical arrangements are possible.

Turning now to Figure 4, the gripper 7, which is attached to the clevis 4 by means of a pin 15, comprises a plate-like part 10, providing a gripping surface 11, and a release arm 12 which is pivotally mounted at 13 on the part 10 and bears gripping teeth 14. In the gripping position shown, the mail bag is gripped between the teeth 14 and gripping surface 11. Any tendency of the bag to slip downwardly from between the teeth 14 and gripping surface 11 will increase the gripping pressure. The bag can be released merely by moving the release arm 12 in the direction indicated by the arrow A towards the arm position B.

The use of the hanger and gripper will now be described. When designed to be used with a

magnetic reader, the encoding apparatus at a loading station could consist of an array of buttons or a key pad on which the operator would enter the discharge address. This would be processed by an electronic encoding unit and recorded on the hanger tabs. Whether magnetically or optically decodable tabs are used, the hanger is conveyed around the track of the conveyor and the tabs read by each detector until a detector detects on the tabs the code assigned to that detector. Under such circumstances, the detector repositions a trip stop in the path of travel of an inclined surface 16 on the release arm 12, such that when the incline surface strikes against the trip stop, the arm 12 is caused to pivot in the direction A to release the mail bag from the hanger. It is to be noted that the disclosed arrangement of the tabs not only enables all the tabs easily to be read at the same time by virtue of the tabs on each side of the arm being arranged one above another but also facilitates being able reliably to read the several sets of information carried by the tabs.

Preferably, the reading head of each detector is positioned so as not to be in contact with the tabs even when the hanger has moved into the information decoding position, thereby avoiding problems due to sideways movements or vibration of the hanger while moving along the conveyor.

The number of bits of information on the tabs may be varied in accordance with the number of loading/discharge stations.

Although the described hanger is provided with four tabs other numbers of tabs may be used or even one only.

Claims

1. A hanger for carrying an article below an overhead conveyor, comprising an upright arm, support means on the arm for enabling the arm to hang below the conveyor and be supported thereby, mounting means on the arm below the support means by which the article can be attached to the arm, and at least one tab on the arm bearing encoded information which can be read by an optical or magnetic reader.

2. A hanger according to claim 1 having two or

more tabs on the arm, wherein the tabs are arranged so as to be on one or both sides of the arm, the tabs on the one or each side which has more than one tab thereon being arranged one above another spaced lengthwise of the arm.

3. A hanger according to claim 1 or 2, wherein the one or each tab bears two or more bits of information thereon.

4. A hanger according to any one of the preceding claims, wherein the mounting means is in the form of a gripping device comprising a plate-like part, having a gripping surface therein, and an arm which is pivotally mounted on the plate-like part and bears gripping teeth to enable an article to be gripped between the gripping teeth and the gripping surface, the arrangement of the plate like part and the arm being such that the action of the weight of the article urges the gripping teeth towards the gripping surface.

5. A hanger according to claim 4, wherein the said arm is provided with an inclined surface thereon such that, in use, impact of the inclined surface with a trip stop as the hanger is conveyed along the track of the conveyor will cause the said arm to pivot to release an article being carried.

6. An overhead conveyor system, comprising a hanger in accordance with claim 5 carried from the overhead conveyor, a plurality of detectors at different stations along the conveyor track, each detector being assigned a different code and having a reader for reading coded information on the tabs or tab when the hanger passes the corresponding station, and a movable trip stop associated with each station, each trip stop being normally positioned clear of the path of movement of the individual surface as the hanger is conveyed along the conveyor track but being moved into a gripping device releasing position when the associated detector detects coincidence between the coded information read by the respective reader and the code assigned to that detector.

7. A hanger for carrying an article below an overhead conveyor, substantially as hereinbefore described with reference to the accompanying drawings